

## Chronic Disease Indicators: Indicator Definition



### Asthma, mortality

Category:	Other Diseases and Risk Factors
Demographic Group:	All resident persons.
Numerator:	Deaths with International Classification of Diseases (ICD)-10 code J45-J46 (ICD-9 code 493) as the underlying cause of death among residents during a calendar year.
Denominator:	Midyear resident population for the same calendar year.
Measures of Frequency:	Annual number of deaths. Annual mortality rate — crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population, distribution 1*) — with 95% confidence interval.
Time Period of Case Definition:	Calendar year.
Background:	<p>In 1980 there were 2,891 deaths with asthma as the underlying cause. Based on single-year data, a significant linear increase occurred in the number of asthma deaths between 1979 and 1998. In 1999, ICD9 coding was replaced with ICD10. A significant decline in asthma deaths occurred between 1998 and 1999 that was in addition to the decline (approximately 11%) resulting from the ICD revision. While asthma deaths increased between 1980 and 1995, the suggestion of a plateau or a decline occurred during the last two years (1997 and 1998) of ICD9 coding (3). Under ICD10 coding, the number of asthma deaths has declined. For each recent year, the number of asthma deaths was significantly lower than the number of deaths in 2000. In 2000 there were 4,483 deaths and in 2004 there were 3,816 deaths with asthma as the underlying cause.</p>
Significance :	<p>The majority of the problems associated with asthma are preventable if asthma is managed according to established guidelines. Effective management includes control of exposure to factors that trigger exacerbations, adequate pharmacological management, continual monitoring of the disease, and patient education in asthma care.</p>
Limitations of Indicator:	<p>The reliability of death certificate data for asthma has been questioned. Asthma mortality rates for older age groups have been assumed to be unreliable because of misreporting the cause of death in older persons with confounding medical conditions. This assumption is often cited as the reason for limiting asthma analysis and research to persons in younger age groups. Certain studies have supported the assumption that coding asthma as the underlying cause of death results in an over-estimation of the number of deaths from asthma in the elderly. A majority of these studies, however, were done in countries where asthma mortality rates far exceed that in the United States; studies based within the United States were small and included very limited populations. In contrast, a larger and well-designed study concluded that asthma death coding had very high specificity (99%) and low sensitivity (42%); that asthma as a cause of death was under-reported rather than over-reported in preference to COPD (58% false negative, 1% false positive); and that there was no age effect. This study casts some doubt on the assumption that coding of asthma deaths in older individuals is unreliable in the United States. However, no studies representative of the entire US vital statistics system have been published.</p>
Data Resources:	<p>Death certificate data from vital statistics agencies (numerator) and population estimates from the U.S. Bureau of the Census or suitable alternative (denominator).</p> <p><a href="http://wonder.cdc.gov">http://wonder.cdc.gov</a></p>
Limitations of Data Resources:	<p>Causes of death and other variables listed on the death certificate might be inaccurate.</p>

Healthy People 2010  
Objectives:

24-1: Reduce asthma deaths. (24-1a is specific for children aged <5 years; 24-1b is specific for children aged 5–14 years; 24-1c is specific for adolescents and adults aged 15–34 years; 24-1d is specific for adults aged 35–64 years; 24-1e is specific for adults aged ≥65 years.)

\* See Klein RJ, Schoenborn CA. Age adjustment using the 2000 projected U.S. population. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics, 2001. Healthy people 2010 statistical notes, no. 20. <http://www.cdc.gov/nchs/data/statnt/statnt20.pdf>